CLAIMS:

What is claimed is:

1. A method of color calibrating an imager device comprising:
subjecting said imager device to a plurality of light sources;
obtaining a first set of color channel responses from said imager device; and
determining color calibrating coefficients for said imager device.

2. The method according to claim 1, wherein said color channel responses are red, green and blue (RGB) responses.

3. The method according to claim 1, wherein said color channel responses are cyan, magenta, yellow (CMY) responses.

4. The method according to claim 1, wherein said color channel responses are cyan, magenta, yellow, green (CMYG) responses

5. The method according to claim 1, wherein said imager device is subject to said plurality of light sources sequentially, obtaining said first set of color channel responses comprises obtaining color channel responses corresponding to each of said plurality of light sources.

6. The method according to claim 5, wherein said plurality of light sources are of known color values.

7. The method according to claim 6, wherein said known color values of said plurality of light sources are defined by XYZ tristimulus values, determining said color calibrating coefficients further comprises:
forming a MEAS matrix from said first set of color channel responses;

forming a first correlating matrix from said MEAS matrix;

separating said known color values of said plurality of light sources into a vector of X components, a vector of Y components, and a vector of Z components;

determining a first vector of color calibrating coefficients by multiplying said first correlating matrix with said vector of X components;

determining a second vector of color calibrating coefficients by multiplying said first correlating matrix with said vector of Y components;

determining a third vector of color calibrating coefficients by multiplying said first correlating matrix with said vector of Z components; and

forming a color calibrating matrix from said first vector, second vector, and third vector of color calibrating coefficients.

8. The method according to claim 5, after obtaining said first set of color channel responses, the method further comprises:

subjecting said imager device to a plurality of reflective color targets of known colors;

obtaining a second set of color channel responses from said imager device corresponding to each of said plurality of color targets;

determining color calibrating coefficients from said second set of color channel responses;

repeating for a plurality of imager sensors, obtaining said first set of color channel responses, obtaining said second set of color channel responses, and determining color calibrating coefficients from said second set of color channel responses;

determining correlating coefficients correlating said first set of color channel responses to said color calibrating coefficients; and

forming a plurality of equations correlating said color calibrating coefficients to said first set of color channel responses using said correlating coefficients.

9. The method according to claim 8, further comprising:

determining said color calibrating coefficients using said plurality of equations;

forming a color calibrating matrix from said color calibrating coefficients.

10. The method according to claim 1, wherein said plurality of light sources are lighted simultaneously, and said plurality of light sources are of known color values.

11. The method according to claim 10, wherein subjecting at least one imager device to said plurality of light sources further comprises:

determining a color value of a color target to be simulated;

determining a set of weighting factors correlating said color values of said plurality of light sources to said color value of said color target to be simulated;

powering said plurality of light sources according to said set of weighting factors.

12. The method according to claim 11, further comprising:

determining a plurality of sets of weighting factors corresponding to a plurality of color targets to be simulated;

powering said plurality of light sources according to said sets of weighting factors corresponding to said plurality of color targets;

obtaining said first set of color channel responses from said imager device corresponding to said plurality of light sources powered according to said sets of weighting factors.

13. The method according to claim 10, wherein subjecting at least one imager device to said plurality of light sources further comprises:

determining a color value of a color target to be simulated;

determining a set of weighting factors correlating said color values of said plurality of light sources to said color value of said color target to be simulated;

subjecting said imager device to said plurality of light sources;

modifying an obtained color channel responses from said imager device according to said set of weighting factors.

14. The method according to claim 13, further comprising:

determining a plurality of sets of weighting factors corresponding to a plurality of color targets to be simulated;

forming said first set of color channel responses by modifying said obtained color channel responses from said imager device with said respective sets of weighting factors.

15. The method according to claim 10, wherein said known color values of said plurality of light sources are defined by XYZ tristimulus values, determining color calibrating coefficients from said first set of color channel responses further comprises:

forming a MEAS matrix from said first set of color channel responses;

forming a first correlating matrix from said MEAS matrix;

separating said known color values of said plurality of light sources into a vector of X components, a vector of Y components, and a vector of Z components;

determining a first vector of color calibrating coefficients by multiplying said first correlating matrix with said vector of X components;

determining a second vector of color calibrating coefficients by multiplying said first correlating matrix with said vector of Y components;

determining a third vector of color calibrating coefficients by multiplying said first correlating matrix with said vector of Z components; and

forming a color calibrating matrix from said first vector, second vector, and third vector of color calibrating coefficients.

16. An apparatus comprising:

a chamber having an opening to receive an imager device and an inner surface; and

a plurality of light sources coupled to said inner surface of said chamber to stimulate said imager device.

17. The apparatus in claim 16, where said plurality of light sources are light emitting diodes (LEDs).

18. The apparatus in claim 17, comprising five LEDs having the wavelengths 40nm, 470nm, 545nm, 590nm and 660nm respectively.

19. The apparatus in claim 18, wherein said plurality of light sources have band spreads of greater than 5nm.

20. The apparatus in claim 16, further comprising a computing device coupled to receive an output of said imager device.

21. The apparatus in claim 20, where said computing device is further coupled to said plurality of light sources.

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